

Chico

**Golden
Empire
Amateur
Radio
Society, Inc.**

www.gearsww6rhc.org

"Dedicated to Public Service"

THE RADIATOR

W6RHC
IRLP #8170

P.O.Box 202 Chico, CA 95927

September 2021 Newsletter

GEARS Founded August 13, 1939

Michael Favor N6FAV gave an interesting presentation on Greek letters used in electronics at our last meeting. He also asked for suggestions for meeting topics. If you have something you'd like to present at our meeting, please let me know. Also if there is something you'd like to discuss or learn about it, send me a note or call me.

We will have another breakfast in September. We plan to continue this on the second Saturday of each month at Farmers Skillet in Chico. However they now that ask our that our group is all on one check, so please bring cash.

Our Steak Bake is coming up on Sunday September 12th at Widwood Park in Chico. We haven't decided yet if we will just have an open BBQ and let everyone bring what they want or charge for steaks. I'll let everyone know by email.

COVID conditions continue to get worse and Enloe is seeing a lot of very sick COVID patients. It's important that we keep our members safe. If the situation continues to become more dangerous, we may need to increase restrictions or cancel meeting and events. I'll keep our membership informed.

Happy September Birthday wishes to John Bush KH6DLK, Susan Check KE6LTY, and Steven Wright KM6DBS.

Take care and stay safe.



'73
Jim Matthews K6EST
jiminchico@yahoo.com
530-893-3314



Join GEARS on Facebook
www.facebook.com For timely
news and additional information.

September 2021 Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2 7pm PARS Net 7:30pm Simplex Net	3	4
5 8pm OARS Net	6 Labor Day 7pm GARS Net 8pm ARES Net	7 7:30pm GEARS Net	8	9 7pm PARS Net 7:30pm Simplex Net	10 7pm OARS meeting 7pm GARS meeting	11 9am GEARS Breakfast
12 Noon Steak Bake Chico 8pm OARS Net	13 7pm GARS Net 8pm ARES Net	14 7:30pm GEARS Net	15	16 7pm PARS Net 7:30pm Simplex Net	17 7pm GEARS Meeting	18
19 8pm OARS Net	20 7pm GARS Net 8pm ARES Net	21 7:30pm GEARS Net	22	23 7pm PARS Net 7:30pm Simplex Net	24	25 9am OARS Breakfast
26 8pm OARS Net	27 7pm GARS Net 8pm ARES Net	28 7:30pm GEARS Net	29	30 7pm PARS Net 7:30pm Simplex Net		

VEC Testing, FCC License Exam available by appointment. For information or registration call Tom Rider, W6JS 530-514-9211
Chico Breakfast 2nd Saturday 9am Farmers Skillet Cohasset Rd, Chico
GEARS Board Meeting 1st Monday 7pm by zoom.
OARS Meeting Second Friday of the month
GARS Meeting Second Friday of the month
Butte ARES Meeting 3rd Tuesday, TBD Contact Dale Anderson, KK6EVX 826-3461 for more information.
GEARS Meeting, 3rd Friday of the month, Eyeball QSO 6pm, meeting at 7:00 pm. Search & Rescue Building
OARS Breakfast 4th Saturday of the month

NETS:

OARS Club Net Sunday 8pm 146.655 Mhz - PL 136.5
GARS Club Net: Monday, 7:00 pm 147.105 MHz + PL 110.09
Butte ARES Net Mondays 8pm 145.290 MHz - PL 110.9
Yuba Sutter Club Net Monday 7pm 146.085 MHz + PL 127.3
GEARS Club Net Tuesdays 7:30 PM 146.850 MHz - PL 110.9
PARS Club Net Thursday 7pm 145.290 - PL 110.9
Simplex Net Thursday 7:30 p.m. 146.52 no tone
Yuba Sutter ARES Net Thursdays 7pm 146.085 MHz + PL 127.3
Sacramento Valley Traffic Net Nightly 9:00 PM 146.850 MHz - PL 110.9

GEARS Century Members

Dale Anderson Kent Hastings
Bennett Laskey Tony Nasr
Scott Roberts

We thank these members for their extra support.

GEARS Repeaters

GEARS West on St. John
145.410 MHz PL is 123.0 Negative offset.
PL both input and output (CTSS)

GEARS East in Forrest Ranch
146.850 MHz Negative offset. PL 110.9 CTSS
440.650 MHz Plus offset, PL 110.9 Hz

ARES and CERT members staffed the CERT booth with uniformed four-person teams at the Butte County Fair in Gridley. The booth display showed CERT's recent activities related to fires and the pandemic. They handed out literature, signed people up for a fire extinguisher giveaway, and perhaps of interest to GEARS members, demonstrated the use of radio to passers-by.

Licensed CERT team operators have been reading "Code Red" alerts from the Butte County Sheriff's Office on GMRS and amateur repeaters informing listeners about recent evacuation orders and warnings. The latest radio training on August 14th filled the classroom at the Sheriff's Posse location, including a group of about twenty visitors from the Forest Ranch area. The importance of radio communications during disasters is getting out thanks to CERT and ARES.



Butte County CERT has a "Radio Help" page describing a "Get On The Air" (GOTA) program on their website, <https://buttecountycert.com/radio-help/>

Contributed by Kent Hastings, ham call: WA6ZFY, GMRS call: WRFT486

Efficient 2 meter Disguise Antenna Made From a TV Satellite Dish

By John Portune W6NBC

This horizontal "slot" antenna, cut into the reflector of a TV dish, is both the master of disguise and high in performance. Since most apartments and POAs allow satellite dishes, this design allows you a way to get around the no antenna rules.

I've long wondered, is it practical to hide an efficient 2 meter base station antenna in a TV satellite dish? My CC&R committee couldn't make me take it down. But what about all the metal in the TV dish? Wouldn't that compromise a 2 meter antenna? Finally it struck me, don't fight the metal; take advantage of it. Cut a "slot" antenna into the TV dish's reflector.

A slot antenna is a narrow rectangular opening in a large conductive surface, such as a TV satellite dish. Slot antennas are familiar in the commercial radio world, but not to hams. They're common in TV broadcasting, the skin of aircraft and in radar, microwave and cell phone applications. This disguised TV dish slot is equal to a J-pole and is also a great way to learn about slot antennas.

The slot behaves much like a dipole providing about 2 dBi gain. The width of the slot determines it's bandwidth. A slot of a single jig-saw blade width provides SWR of 1.5 to 1 over the entire 2 meter bandwidth.



For complete information on building this antenna see: <http://w6nbc.com/articles/20xx-dishslot.pdf>

WHERE'S THAT RADIO? A BRIEF HISTORY OF DIRECTION FINDING

by: Al Williams

We think of radio navigation and direction finding as something fairly modern. However, it might surprise you that direction finding is nearly as old as radio itself. In 1888, Heinrich Hertz noted that signals were strongest when in one orientation of a loop antenna and weakest 90 degrees rotated. By 1900, experimenters noted dipoles exhibit similar behavior and it wasn't long before antennas were made to rotate to either maximize signal or locate the transmitter.

Of course, there is one problem. You can't actually tell which side of the antenna is pointing to the signal with a loop or a dipole. So if the antenna is pointing north, the signal might be to the north but it could also be to the south. Still, in some cases that's enough information.

John Stone patented a system like this in 1901.

Well-known radio experimenter Lee De Forest also had a novel system in 1904. These systems all suffered from a variety of issues. At shortwave frequencies, multipath propagation can confuse the receiver and while longwave signals need very large antennas. Most of the antennas moved, but some — like one by Marconi — used multiple elements and a switch.

However, there are special cases where these limitations are acceptable. For example, when Pan Am needed to navigate airplanes over the ocean in the 1930s, Hugo Leuteritz who had worked at RCA before Pan Am, used a loop antenna at the airport to locate a transmitter on the plane. Since you knew which side of the antenna the airplane must be on, the bidirectional detection wasn't a problem.

Radio navigation owes a lot to ordinary celestial navigation and surveying. Instead of sighting a lighthouse, the sun, or a star, you sight a radio transmitter.

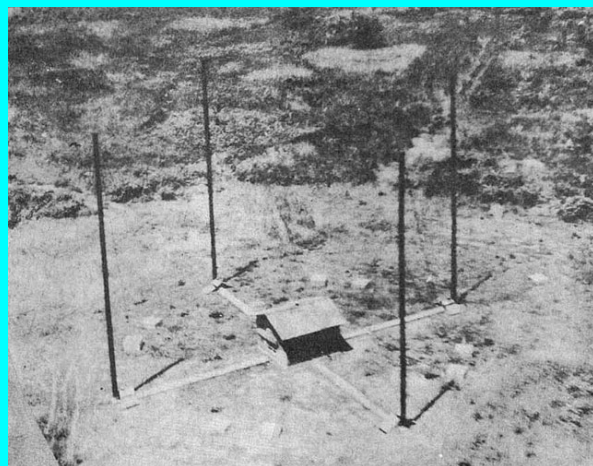
Consider you are in a field that has a flagpole on it and you know the exact location and height of the pole. If you are somewhere in the field and want to know where you are, you can use the pole. You sight the pole and measure the angle to the pole. Since you know the height and the angle, you can use geometry to draw a circle around the pole that you must be on.

Of course, you could be anywhere on the circle — what navigators call a line of position. But what if you had two poles? You could draw two circles. If you are lucky, the circles will touch at exactly one point and that is where you are. However, it is more common to have two points and — presumably — one will be very far away from where you ought to be and one will be close to where you should be.

Even with a simple pair of loops, you can do the same trick if they are far enough apart. If station one shows an angle of 30 degrees (or 210 degrees; it is ambiguous) to the transmitter and station two shows an angle of 300 degrees, you can triangulate by drawing two lines and noting where they cross.



British radio direction finding truck 1927



A 2MHz Adcock installation

Even so, there was a demand for something better. In 1909 Ettore Bellini and Alessandro Tosi introduced an innovation. The Bellini-Tosi system used two antennas at right angles that fed coils. A third loop moved inside the coils to find the direction. This allowed the large antennas to remain stationary. By the 1920s these were quite common and remained so until the 1950s.

By 1919, the British engineer Frank Adcock came up with a system that used four vertical antennas, either monopoles or dipoles. This arrangement wired the antennas to effectively make a square loop that ignores horizontally polarized signals, thus reducing the reception of skywaves. Adcock antennas were often used with Bellini-Tosi detectors.

In 1926, Brit Robert Watson-Watt was trying to detect lightning to help airmen and sailors avoid storms. Lightning signals are very fast, but it took about a minute for an experienced operator to line up a Bellini-Tosi detector. By coupling an Adcock antenna and an oscilloscope, Watt was able to rapidly lock onto a lightning bolt or a radio transmitter.

The military high-frequency direction finder or huff-duff proved invaluable during the war. The German U boats kept transmissions short to avoid detection, but with the huff-duff, that didn't matter. The Germans didn't figure out the technology improvement and estimates are that 25% of U boat sinking were due to the huff-duff.

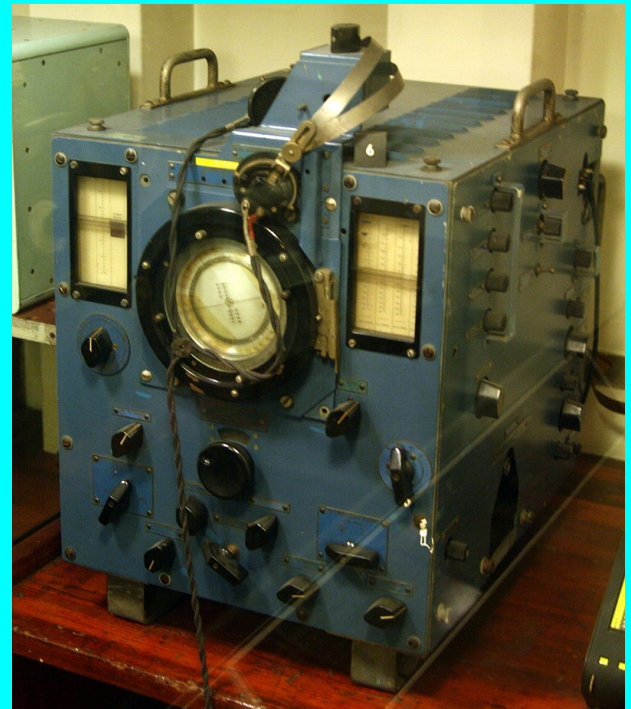
Modern-day systems are much more sophisticated using phase locked loops and other techniques. Although some early systems like the one used by Pan Am used transmitters on the plane and receivers on the ground, most systems do the opposite. Older ADF — automatic direction finding — sets used motorized antennas to locate known transmitters. Modern sets use the Marconi system with multiple antennas, although the switch is electronic in this case.

Ham radio operators enjoy fox hunting — part of the event known as “radiosport” in most of the world — which is essentially hide and seek played with a radio transmitter.

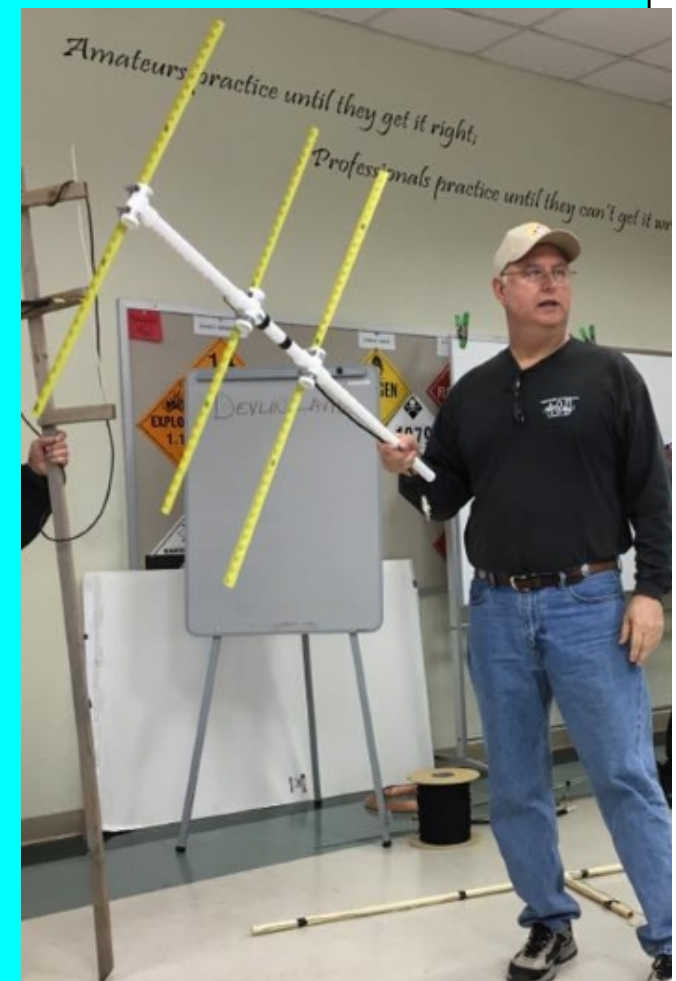
You might think that GPS has made radio direction finding a thing of the past. However, if you think about it, GPS is sort of a different form of radio direction finding. Instead of using a bearing of an antenna, you are measuring signal arrival time, but it is the same idea. The time delay gives you a circle from the known position of the satellite. Making multiple circles around multiple satellites gives you an exact position.

Sure, the technology is a far cry from Hertz's loop antenna. But radio direction is still a key part of modern navigation systems.

From <http://hackaday.com/>



Huff Duff Gear



Tape measure VHF/UHF Yagi for Fox hunting

GEARS Club Officers:

President.....	Jim Matthews, K6EST
Vice-President.....	Paul Stewart, N6PAS
Secretary.....	Open
Treasurer.....	Kathy Favor, K6FAV
ARES.....	Dale Anderson, KK6EVX
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Director.....	Kent Hastings, WA6ZFY
Director.....	Rich Astley, N3UOR
Past President.....	Tom Rider, W6JS
VEC.....	Tom Rider, W6JS

GEARS Radiator past issues are available at:

<https://drive.google.com/drive/folders/0B-jPu0P0RkymZ2Q1WDR6THZLNmM?usp=sharing>

Photos from GEARs Steak 1969

<https://photos.app.goo.gl/euv1NPHCjtwAcwT69>

Photos from GEARs Steak 1989

<https://photos.app.goo.gl/n66qqKsNLdwTgJBc6>

Photos from GEARs Ham Fest 1989

<https://photos.app.goo.gl/kq29mD5io6wXd9fk6>

Photos from GEARs recent GEARs meetings

<https://photos.app.goo.gl/kq29mD5io6wXd9fk6>



BIZARRO

Dan Piraro



FACEBOOK.COM/OFF THE LEASH DAILY DOG CARTOONS